

# Hymettus

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## **A survey of *Odynerus simillimus* nest sites in the Norfolk Broads in 2008**



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Cover photograph:  
*Odynerus simillimus* by Tim Strudwick

## Summary

- Four sites where *Odynerus simillimus* had been observed nesting in recent years were visited on two dates, in July and August 2008.
- Nests were present at all 4 sites in July, with minimum total of 21 active nests, though only one site had more than 3 nests. No active nests were found on the August visit.
- Nesting habitat at all sites is described.
- Much of the area within 3 km of the occupied sites was searched for additional nest sites and potential nest habitat. No further nests were found, but a few potential sites for future survey were located.
- Some suggestions for further survey work and habitat enhancement are made.

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# 1. Background

## 1.1 Survey Aims

The aim of this survey was to monitor populations of *Odynerus simillimus* Morawitz, 1867 at known nesting sites in the Norfolk Broads, and to try to locate further nest sites.

## 1.2 Previous Work

Considered extinct in the UK for much of the 20<sup>th</sup> century, *Odynerus simillimus* was rediscovered at Hickling Broad in 1986 (Archer, 1989). This very rare potter wasp has since been collected from a handful of coastal wetland sites in Essex, Suffolk and Norfolk, and nesting aggregations have only been recorded in Tendring District, Essex and the Norfolk Broads. Falk (1991) listed the wasp as provisionally Endangered (pRDB1) and it has been added to the BAP Priority Species list in the latest review.

*Odynerus simillimus* has a strong association with wetlands. Adults are active from June to August. Observations by Mike Edwards, David Scott and Peter Harvey, and autecological studies commissioned by the Aculeate Conservation Group, have identified some important details of its life history (Booth and Foster, 2003). Subterranean nests are provisioned with larvae of the weevil *Hypera pollux* collected from Lesser Water Parsnip *Berula erecta* or Fool's Watercress *Apium nodiflorum*. Adults have been observed robbing nectar from Tufted Vetch *Vicia cracca*.

## **2. Methods**

### **2.1 Site selection**

Four sites where *O.simillimus* had been observed nesting in recent years were identified. Two of these sites, at Hickling Broad and Sutton Broad, were visited in 2007 (Lee and Scott, 2007; Strudwick, 2008). Two other sites at Hickling Broad had been discovered by the fourth site, on the nature reserve (Mrs. Myhill's Marsh) was discovered in 2006 and 2007 by the Norfolk Wildlife Trust (NWT) Warden, John Blackburn (pers.comm.). Some time was also spent searching elsewhere in the vicinity of Hickling Broad, Sutton Broad and Martham Broad in an attempt to locate additional nest sites. Aerial photos and OS maps were used to identify banks and dry ground close to fen and ditches, which might provide suitable nesting habitat, to target these additional searches.

### **2.2 Survey methods**

All sites were visited on 24/07/2008 and 15/08/2008, additional searches for new nest sites were also undertaken on 09/08/2008. The areas were carefully searched, at times on hands and knees, for "active" nests. Nest holes with the distinctive short "chimney" intact were judged to be active. A few holes were observed where a partial or remnant "chimney" was present, and these were considered to be possible nests. Soil types and situation of nest sites and nearby habitat and vegetation were noted.

### 3. Survey Sites and Results

#### 3.1 Sutton Fen RSPB Reserve

This site lies to the north of Sutton Broad, and within the RSPB Sutton Fen Nature Reserve, and was first discovered in 2007. On 24/07/2008, two active nests were found, and a possible third, on bare ground just below the crown of a south-facing bank of sandy silt (TG37212381). These were within a few centimetres of the two nests seen in 2007. The bank, about 1m high, is located at boundary of the fen and the higher, dry ground, and constructed from the spoil of an adjacent pond, dug at least 50 years ago judging from the age of trees on the bank. The bank was vegetated with sparse grass (*Agrostis* sp.) and a little bramble, with *Juncus effusus* and *Phragmites* in the damper ground at its base, and much of the bank was partially shaded by oak trees. The bank was grazed by cattle, and trampling by cattle seemed to be reason for the bare patches on the bank. The bank was also a nest site for a number of other aculeates, with *Macropis europaea*, *Andrena denticulata*, *A. bicolor*, *Nomada fabriciana*, *Lasioglossum morio*, *Sphecodes niger*, *Halictus tumulorum* and *Arachnospila anceps* all recorded during the survey. The surrounding land was species-rich tall fen, with frequent *Berula erecta*, and fen carr, deciduous woodland and improved grassland. During the half hour or so spent at this site, a female *O.simillimus*, carrying a weevil larva, was netted close to the nests (and released). No nests or adult wasps were observed on 15/08/2008.

The area of fen, carr, dry woodland and improved grassland bounded by Sutton Broad, Stalham Dyke and the A149 was searched on 24/07/2008 for other nest sites. The only other potential nesting habitat located was the rootplate of a fallen oak (TG37271424), which was riddled with aculeate holes, mostly of *Odynerus spinipes* and *Colletes daviesanus* on the vertical face, but probably involving several other species. Of interest, one hole noted on level soil had a short chimney, and was recorded as a possible *O.simillimus* nest. However, returning to the site several hours later, the chimney had been extended, and was typical of *O.spinipes*.

#### 3.2 Hickling Broad NWT Reserve (West)

This site was at the landward edge of the large block of fen fringing the western edge of Hickling Broad, approximately 500m from the broad, at the north end of the area known as Mrs. Myhill's Marsh and just south of Catfield Common. In summer 2007, the NWT warden, John Blackburn, discovered a new aggregation of "several" active nests on spoil, arising from ditching work in 2006, on the west side of the ditch that runs north from Mrs. Myhill's Marsh to Catfield Dyke. This spoil was mostly thickly vegetated with *Juncus* and bramble by the survey visit on 24/07/2008 and a careful search of the remaining bare ground did not reveal any definite nests. However, a search of the low bank to the east of this dyke located a single active nest by the base of an oak tree, about 50 cm above the water level (TG40522157). The nest site was partially shaded by a row of oak trees. The area was grazed at the time, and the majority of the bank had been heavily trampled by cattle, possibly obscuring other nests. *Macropis europaea* was seen entering a nest burrow nearby. No adults were seen close to the nest, but a female *O.simillimus* was netted at tufted vetch *Vicia cracca* on the edge of an arable field (TG40462158) about 40m from the nest site. No nests or adult wasps were observed on 15/08/2008.

Within the general vicinity, potentially suitable nesting habitat was noted on the root plate of a fallen oak near the end of the Catfield Common access track, which had a large number of holes in its north-facing vertical face. This was hard to inspect, as it hung over deep water, but was deeply shaded for much of the day. There were also a few bare areas on a mown and well trodden path around Catfield Common, but no evidence of nests.

### **3.3 Hickling Broad NWT Reserve (North)**

This site lies just behind the floodbank, close to the western boundary of the NWT reserve. A nesting aggregation of *Odynerus simillimus* was discovered on ditching spoil here in 2002, and was still present in 2003, but no nests were observed in August 2007, though adult wasps were seen earlier in the season. As noted in 2007, there was little bare ground remaining, but one active nest was found on a small patch of bare sandy silt (TG42202198). A eumenid wasp was seen briefly flying over an area of bare ground 20m from the nest site and was thought to be a probable *O.simillimus*. None of the ditches in the area seemed to contain either *Apium* or *Berula*, but just south of the floodbank there was a large area of fen, on the margin of Hickling Broad, containing at least some *Berula*.

The floodbank and immediate area from this site south-east as far as Whiteslea Lodge, and the track back to the Visitor Centre were searched, but the few areas of bare soil found, mostly on the path/track, were heavily shaded or gravelly.

### **3.4 Willow Farm, Hickling**

This site is on the bend in the floodbank between the Hickling Broads Drainage Mill and the boat house to the west, at TG41852210, on land owned by farmer John Tallowin. On 24/07/2008, between 16 and 18 active nests were observed within 0.5 m<sup>2</sup> of bare ground on the crest of the flood bank. No adult wasps were observed, but the site was visited late in the afternoon and the day had become overcast. On 15/08/2008, no active nests were noted though 3 or 4 nests appeared to have been abandoned, being left open. The crest of the bank is used as a trackway to access the boathouse and moorings. The top of the bank was mown short grass, and the bare areas were created by vehicle (ATV) tracks. The soil was a mix of sand, gravel, chalk and clay. To the south of the floodbank was arable land, and to the north was a 50:50 mix of swamp/fen and open water. The bank was carefully searched from the gateway near the drainage mill to about 50m beyond the boathouse. This area included some fresh, sandy ditch spoil. Other aculeates nesting along the floodbank were *Cerceris arenaria*, *Lasioglossum sp.* and *Myrmosa atra*.

This floodbank is due to be strengthened in the next few years, and the works would almost certainly destroy the colony unless special efforts were made to protect it. The threat of flooding is an emotive issue in the area and the landowners are very sensitive to anything which may delay flood defence work. It would not help the cause of *O.simillimus* if its presence was seen to be an obstacle to flood protection! It ought to be a relatively simple operation to remove the block of soil containing the nests intact, and relocate it away from the works.



### **3.5 Hickling Staithe**

The northern shores of Hickling Broad, from the Staithe by the Pleasure Boat public house, eastwards to the boat houses along Hill Common, were searched on 15/08/2008. There were a few bare areas around the boat moorings, boat houses, roadsides and front gardens that looked like suitable habitat. The only suggestion of a nest was a possible rain-damaged chimney around a nest hole on a small pile of spoil at the Staithe (TG41032248).

### **3.6 Other areas searched**

The floodbank along the southern margin of Hickling Broad from Decoy Road (TG41212078) to the boat house on Candle Dyke (TG43731959) was searched on 24/07/2008 and 09/08/2008. The few bare areas on the Weavers' Way footpath were mostly heavily shaded by trees and shrubs. To the landward side of this bank, across the soke dyke was a large amount of fresh spoil between TG425208 and TG434202, which was generated from ditching works in 2007. Much of the spoil appeared to be a grey silt, and some was unshaded so may provide suitable nest sites. The area is grazed by ponies which may help maintain bare ground. This area also lies within the NWT reserve.

The floodbank along the northern side of Martham Broad was searched on 09/08/2008, from West Somerton Staithe (TG468200) to the bend in the bank opposite Starch Grass (TG457206). The path here was narrow and overgrown, and no suitable nesting areas were observed.

## 4. Discussion

*Odynerus simillimus* nests were located in a fairly wide range of situations. The soils included sandy silts, pure silts, silty clay and a clay/sand/chalk mix, though none were on pure sand or peat. All were on raised substrates, created by human activity – flood banking, ditch and pond excavation and maintenance. Nest sites were all exposed to the sun for several hours during the middle of the day. Nest sites are always on more or less bare ground, though often small patches within well vegetated ground. Individual nest burrows were close together, even where apparently suitable nest sites are not limited. Trees were nearby to all sites – no nests were more than 15m from a tree, and two of the four sites were in well-wooded landscape. This may not be significant, since trees are frequent close to wetland margins in the Broads, but it is possibly indicative of the beneficial microclimate provided by trees in an otherwise open, windswept habitat.

Of the four occupied sites visited, Willow Farm and Sutton Fen appear to provide relatively stable nesting habitat, though at the latter this is dependent on just the right level of grazing and trampling from cattle, and the former site is now threatened with destruction during floodbank strengthening works. The other two sites, on ditching spoil, would seem to be short-lived, possibly only suitable for 1-3 years. Similar ephemeral nesting opportunities should be found quite widely in the Broads, on bare ground created by ditch management, cattle poaching, vehicle activity, cultivation or falling trees, and it is possible that *O.simillimus* does occur more widely, possibly at a low density.

The lack of activity in mid August was disappointing, though the weather has been cool and cloudy most of the month, with some heavy rain shortly before the visit which may have washed out any active nests. The two successive cool and wet summers in 2007 and 2008, may be a factor in the low abundance of *O.simillimus* detected in this survey.

It would seem advisable to attempt to help sustain the Broadland population by providing additional nesting habitat at sites where the species is known to be present. This could be done in minutes if an excavator was on site, or if this was not possible it could easily be done by hand digging. At Hickling Broad NWT Reserve, stripping off a few square metres of turf from the southern side of the vegetated spoil bank at TG422219 would suffice. At Sutton Fen, a new bank could be created across the pond from the existing bank at TG372238. NWT and RSPB should be encouraged to adopt positive management such as this at these reserves.

The preferred foraging habitat in the Broads appears to be reedswamp and fen with lesser water-parsnip (*Berula erecta*) – all occupied sites found in this survey were close to such habitat. Fool's watercress (*Apium nodiflorum*), apparently the main forage plant in Essex, was not noted at any of the sites visited. The single observation of a female away from a nest site, during this survey, was on tufted vetch (*Vicia cracca*), supporting earlier observations of this association.

Given the patchiness of potential nesting habitat, the large search area, the physical difficulties with access and the permissions required, a thorough survey of the potential range of *O.simillimus* in the Broads would be very expensive. In view of the success that John Blackburn has had in finding nesting aggregations of *O.simillimus* on the NWT reserve, it is likely that an awareness campaign among the numerous conservation and land management staff working in the Broads would identify further sites, if indeed they exist. A

leaflet and letter requesting assistance could be sent to staff of the following organisations: Broads Authority, Norfolk Wildlife Trust, RSPB, Broads Internal Drainage Board, Natural England, National Trust, BESL, etc. Farmers and other private landowners would also be worth targeting. Follow up visits could then be made to confirm reports generated by this exercise.

## 5. Conclusions

*O.simillimus* is a rare insect in the Broads, and appears to be in a vulnerable position. It is possible, however, that it occurs more widely than at the known sites centred around Hickling Broad. Suitable nest sites close to foraging habitat appear to be very limited and often short-lived. It is possible that the apparent rarity of the species may be exaggerated by the cool wet summers of 2007 and 2008 depressing the population. Observations during this survey confirm what has been learnt about the species' habitat requirement in other surveys.

In surveying nest sites of *O.simillimus* caution should be exercised in attributing nest burrows to this species purely on the basis of chimney architecture and in the absence of adult wasps due to the potential confusion with partially constructed chimneys of *O.spinipes*.

A thorough survey to clarify the range and population of *O.simillimus* in the Broads could be very time consuming and expensive. An awareness campaign among conservation and land management staff working in the Broads may identify potential new sites more cost effectively.

To help sustain some of the known populations, creation of additional nesting habitat at Hickling Broad NWT reserve and Sutton Fen RSPB reserve should be strongly encouraged.

## 6. Acknowledgements

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The author is grateful to John Blackburn of Norfolk Wildlife Trust, who has discovered the majority of known *O.simillimus* nest locations in the Broads, allowed access to NWT land and provided information on nest sites. John and James Tallowin allowed access to their land at Willow Farm where the largest aggregation was found. Tom Bridge of RSPB allowed access at Sutton Fen and provided information on grazing management at the site.

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# Appendix 1

## Summary of *Odynerus simillimus* nest records

| Site                         | Grid ref | Date       | Active <i>O.simillimus</i> nests |          | Adults observed |
|------------------------------|----------|------------|----------------------------------|----------|-----------------|
|                              |          |            | Confirmed                        | Possible |                 |
| Sutton Broad (RSPB)          | TG372238 | 24/07/2008 | 2                                | 1        | 1f              |
| Hickling Broad (Willow Farm) | TG418212 | 24/07/2008 | 16                               | 2        |                 |
| Hickling Broad (NWT)         | TG422219 | 24/07/2008 | 1                                | 0        |                 |
| Hickling Broad (NWT)         | TG404215 | 24/07/2008 | 1                                | 1        | 1f              |
| Hickling Broad (Staithe)     |          | 15/08/2008 | 0                                | 1        |                 |

## Appendix 2

### List of aculeates recorded during this survey

| <i>Genus and Species</i>          | Site name      | Grid ref | Date       | Recorder      | Determiner    | Number | Sex |
|-----------------------------------|----------------|----------|------------|---------------|---------------|--------|-----|
| <i>Ancistrocerus trifasciatus</i> | Sutton Broad   | TG372238 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 1      | f   |
| <i>Andrena bicolor</i>            | Sutton Broad   | TG372238 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 1      | f   |
| <i>Andrena denticulata</i>        | Sutton Broad   | TG372238 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 1      | f   |
| <i>Andrena minutula</i>           | Hickling Broad | TG418212 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 2      | f   |
| <i>Arachnospila anceps</i>        | Sutton Broad   | TG372238 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 1      | f   |
| <i>Bombus pascuorum</i>           | Hickling Broad | TG404215 | 15/08/2008 | Tim Strudwick | Tim Strudwick | 1      | m   |
| <i>Cerceris arenaria</i>          | Hickling Broad | TG418212 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 3      | f   |
| <i>Chrysis angustula</i>          | Sutton Broad   | TG370242 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 1      | f   |
| <i>Colletes daviesanus</i>        | Sutton Broad   | TG370242 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 1      | f   |
| <i>Ectemnius continuus</i>        | Hickling Broad | TG429217 | 15/08/2008 | Tim Strudwick | Tim Strudwick | 2      | f   |
| <i>Ectemnius lapidarius</i>       | Hickling Broad | TG429217 | 15/08/2008 | Tim Strudwick | Tim Strudwick | 3      | f   |
| <i>Ectemnius lituratus</i>        | Hickling Broad | TG429217 | 15/08/2008 | Tim Strudwick | Tim Strudwick | 2      | f   |
| <i>Halictus tumulorum</i>         | Sutton Broad   | TG372238 | 15/08/2008 | Tim Strudwick | Tim Strudwick | 1      | f   |
| <i>Hylaeus pectoralis</i>         | Hickling Broad | TG404215 | 15/08/2008 | Tim Strudwick | Tim Strudwick | 1      | f   |
| <i>Hylaeus pectoralis</i>         | Hickling Broad | TG416207 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 1      | f   |
| <i>Hylaeus pectoralis</i>         | Hickling Broad | TG422219 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 1      | f   |
| <i>Lasioglossum morio</i>         | Sutton Broad   | TG372238 | 15/08/2008 | Tim Strudwick | Tim Strudwick | 3      | mf  |
| <i>Lestiphorus bicinctus</i>      | Hickling Broad | TG410266 | 15/08/2008 | Tim Strudwick | Tim Strudwick | 1      | m   |
| <i>Macropis europaea</i>          | Hickling Broad | TG404215 | 15/08/2008 | Tim Strudwick | Tim Strudwick | 1      | f   |

|                                |                |          |            |               |               |    |    |
|--------------------------------|----------------|----------|------------|---------------|---------------|----|----|
| <i>Macropis europaea</i>       | Sutton Broad   | TG372238 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 10 | f  |
| <i>Macropis europaea</i>       | Sutton Broad   | TG372238 | 15/08/2008 | Tim Strudwick | Tim Strudwick | 3  | f  |
| <i>Megachile centuncularis</i> | Hickling Broad | TG410266 | 15/08/2008 | Tim Strudwick | Tim Strudwick | 1  | f  |
| <i>Megachile ligniseca</i>     | Hickling Broad | TG404215 | 15/08/2008 | Tim Strudwick | Tim Strudwick | 1  | f  |
| <i>Mellinus arvensis</i>       | Sutton Broad   | TG372238 | 15/08/2008 | Tim Strudwick | Tim Strudwick | 2  | f  |
| <i>Myrmosa atra</i>            | Hickling Broad | TG418212 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 1  | f  |
| <i>Nomada fabriciana</i>       | Sutton Broad   | TG372238 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 4  | mf |
| <i>Nomada rufipes</i>          | Hickling Broad | TG422219 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 1  | f  |
| <i>Odynerus simillimus</i>     | Hickling Broad | TG404215 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 1  | f  |
| <i>Odynerus simillimus</i>     | Sutton Broad   | TG372238 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 1  | f  |
| <i>Odynerus spinipes</i>       | Sutton Broad   | TG370242 | 24/07/2008 | Tim Strudwick | Tim Strudwick | 3  | f  |
| <i>Sphecodes niger</i>         | Sutton Broad   | TG372238 | 15/08/2008 | Tim Strudwick | Tim Strudwick | 2  | f  |